



**NANO2ALL**

SOCIETAL ENGAGEMENT ON RESPONSIBLE NANOTECHNOLOGY

# Pathways towards a more inclusive nanotechnology development in Europe

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Dr Olga Glumac, SPI ([olgaglumac@spi.pt](mailto:olgaglumac@spi.pt))

[www.nano2all.eu](http://www.nano2all.eu)



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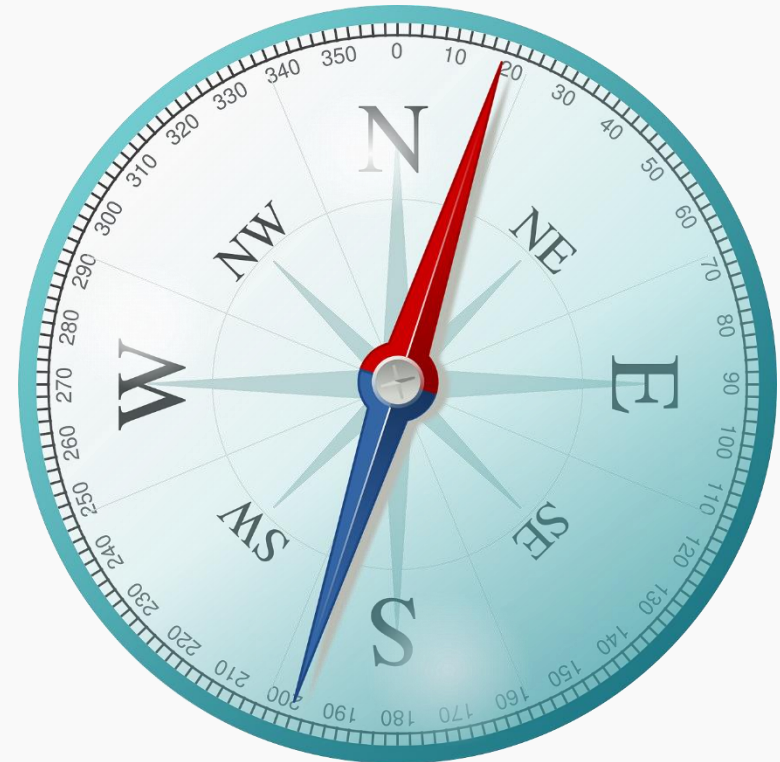
## NANO2ALL in a nutshell

- 3,5 year long Horizon 2020 initiative with 12 partners (2015 – 2019)
- **Aim** - To support policy-making that can foster the responsible development of nanotechnology R&I sensitive to societal needs and values (RRI)
- Within RRI, NANO2ALL's **focus has been on societal engagement / inclusiveness** (interactions between relevant stakeholders to align research, development and innovation with the values, expectations and needs of society).

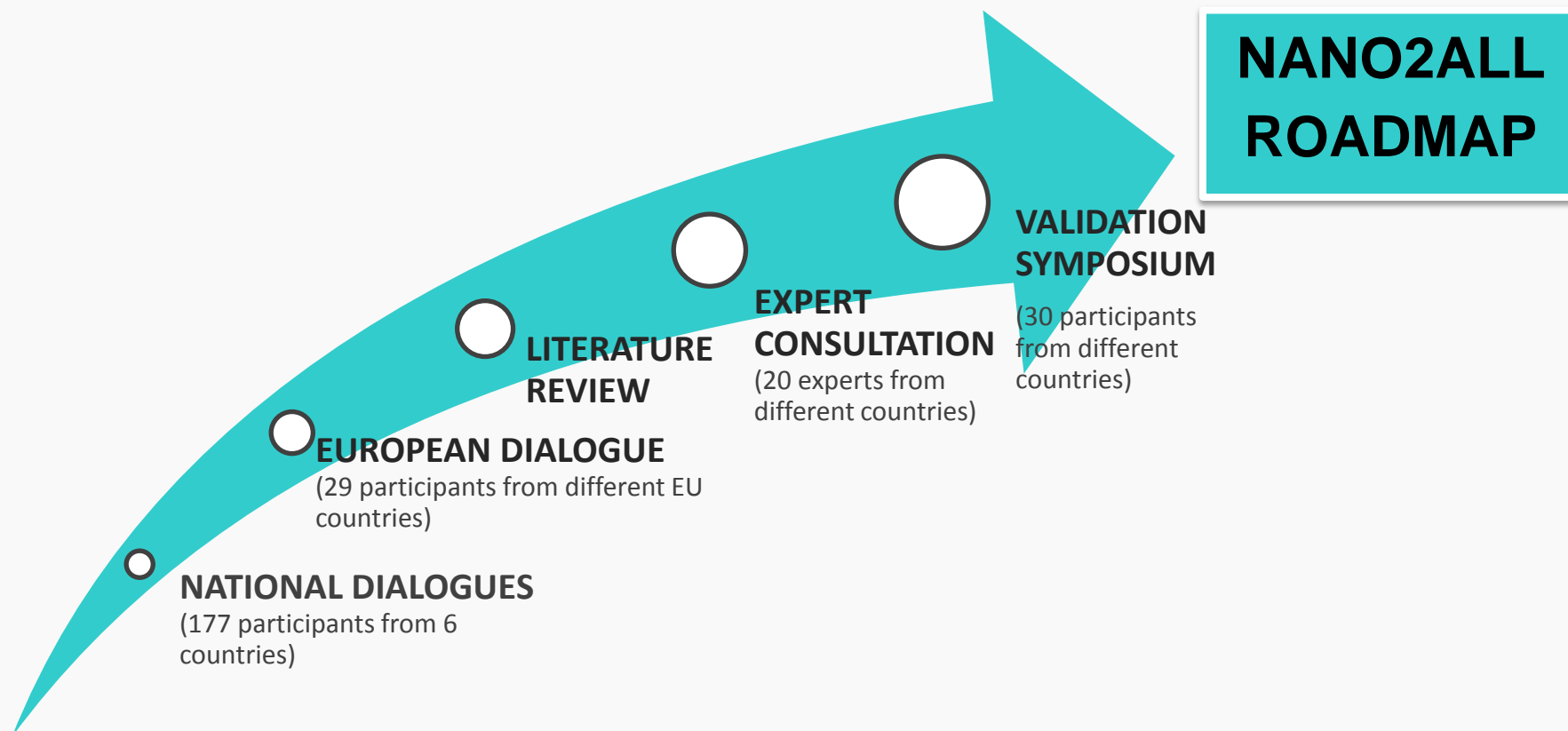


## NANO2ALL main results

- **NANO2ALL Roadmap** on recommended actions for EU and national decision-makers to enhance societal engagement / inclusiveness in nanotechnology R&I in Europe.
- Establishment of **2 Working Groups**:
  1. Working Group for Societal Engagement within Nanofutures European Technology Integrating and Innovation Platform
  2. Societal Aspects Working Group within E-MRS – European Materials Research Society



## Roadmap methodology



## Roadmap key findings

- Deeply-felt **need for inclusiveness** (societal engagement)
- Societal engagement approaches have **not reached a full array** of societal actors
- Societal engagement approaches often did **not establish continuous interactions or trust-building**
- Need to **extrapolate lessons learned** from these initiatives
- Reinforced **role of independent intermediaries** (science centres, professional moderators, science communicators) in the facilitation of interactions on responsible nanotechnology
- The inclusion of societal representatives important at **certain stages of decision-making**
- **Diverse topics** require inclusiveness (these are not always “nano-specific”)
- Need for **several conditions** in place simultaneously for inclusiveness across nanotechnology R&I value chains



**Recommended way forward**

## CONDITION 1: FRAMEWORKS FOR SYSTEMISED SOCIETAL ENGAGEMENT IN NANOTECHNOLOGY R&I

### RECOMMENDED TRAJECTORIES AND ACTIONS

**Trajectory 01: Evaluate past societal engagement activities in research and innovation in nanotechnology.**

- Commission an evaluation study of SE in nano in the past years
- Use knowledge from such an evaluation to elaborate a plan for the promotion of SE in nano and in other emerging tech

**Trajectory 02: Adapt existing frameworks (or create new ones where not existing) to increase the involvement of all actors, incl. citizens and their representatives in R&I decision-making at all stages.**

- Mandate and finance selected EU level and national platforms
- Adapt current public consultations for setting R&I priorities using challenge-led forms of SE
- Adapt existing EU, national and regional research and innovation funding programmes to foster societal engagement in actual nanotechnology R&I processes
- Set up advisory services to support the implementation of societal engagement in nanotechnology R&I

## CONDITION 2: LIFELONG PARTICIPATORY CULTURE IN SCIENCE AND SOCIETY MATTERS

### RECOMMENDED TRAJECTORIES AND ACTIONS

**Trajectory 01: Promote capacity-building and reflections on nano- and other new and emerging technologies via the formal education system.**

- Implement funding programmes for open nano collaborative projects bringing schools in contact with universities and other stakeholders
- Promote the uptake of nano- and other emerging technology related teaching materials
- Provide a fast track framework for interaction between teachers and researchers through existing platforms

**Trajectory 02: Promote scientific culture and critical thinking on nano- and other new and emerging technologies among citizens via lifelong learning and science communication.**

- Fund (incl. through a dedicated strand for science and society matters in Horizon Europe) informal lifelong learning programmes & interdisciplinary funding schemes supporting citizen-science projects embedded into a unique standardised procedure
- Develop a clear set of criteria (performance indicators and guidelines) on the quality of science communication activities



## CONDITION 3: OPEN RESEARCH AND INNOVATION ECOSYSTEM TOWARDS SOCIETAL PERSPECTIVES

### RECOMMENDED TRAJECTORY AND ACTIONS

**Trajectory 01: Foster RRI awareness and competence within the nanotechnology R&I community and incentivise the adoption of RRI by relevant institutions at regional, national and EU levels.**

- Develop a long-term plan for the promotion of awareness-raising and capacity building to members of the R&I community with regard to RRI principles and practices (training programmes coupled with structural changes to the education system aligning academic programmes with RRI goals). Innovation ecosystems (EIT, EIC, etc) should act as multipliers to foster engagement and provide evidence of the benefits of RRI.
- Induce structural and institutional changes within research organisations, including the adaptation of the evaluation frameworks of these entities and researchers to RRI goals.
- Develop and continuously update EU and national level measures in order to incentivise the implementation of RRI. Build on existing frameworks eg. CSR) and set up reward schemes, RRI check-list, encourage bottom-up and organic RRI practices.

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## NANORIGO (NANOtechnology Risk Governance)

- Aims at developing a transparent, transdisciplinary and science-based **Risk Governance Framework (RGF) and related Council** for managing nanotechnology risks regarding social, environmental and economic benefits, closely with other two projects: **RiskGONE** and **Gov4Nano**.
- Various **stakeholders' engagement in analysing and validating scientific data and tools** for the characterization of nanomaterials in relation to **assessment of risk for humans and the environment**.



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## Download the NANO2ALL roadmap

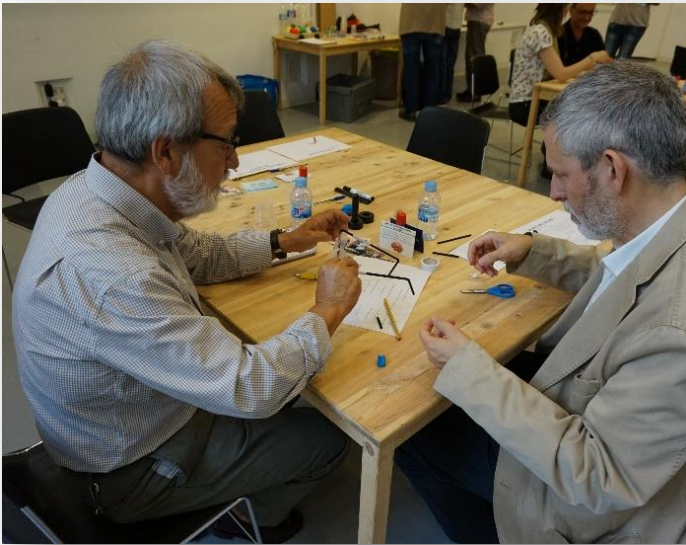


### ROADMAP

FOR A MORE INCLUSIVE  
NANOTECHNOLOGY  
DEVELOPMENT IN EUROPE

[www.nano2all.eu/resources/recommendations](http://www.nano2all.eu/resources/recommendations)

## More on NANO2ALL participatory activities



[www.nano2all.eu/resources/nano2all-dialogue-materials-and-results](http://www.nano2all.eu/resources/nano2all-dialogue-materials-and-results)

# Thank you!

